



SPECIFIC OPERATIONS CHECKLIST

WOOD BASED PRODUCTS

Instructions to the Assessor: The checklist addresses specific accreditation criteria prescribed in Section 285.33, *Criteria for Accreditation*, of the Wood Based Products (WBP) Program Handbook. Included also are instructions and comments sheets used for observing actual demonstrations of the performance of selected test methods. These criteria **do not** supersede the *Criteria for Accreditation*, based on Section 285.33 of the *NVLAP Procedures and General Requirements* (NIST Handbook 150), which are addressed in the GENERAL OPERATIONS CHECKLIST.

Place an "X" beside any of the following items which represent a deficiency. Place a "C" beside each item on which you are commenting for other reasons. Record the item number and your deficiency explanation and/or comments on the appropriate comment sheet(s). Place a check beside all other items you observed or verified at the laboratory.

1 QUALITY SYSTEM

- _____ 1.1 The quality manual provides detailed procedures, including descriptions of equipment, that the laboratory follows in conducting physical, mechanical, and chemical measurements on the different wood and wood-based products for which it seeks accreditation.
- _____ 1.2 The quality manual lists the range (e.g., size, shape, density, and property level) of test specimens that a laboratory can test for each test method for which accreditation is sought.
- _____ 1.3 The quality manual describes practices for maintenance and calibration of the equipment used in conducting the tests on wood and wood-based products.

2 PERSONNEL

Personnel competency for Wood Based Products testing includes applicable portions of the following, as a minimum:

- _____ 2.1 general requirements of the test methods;
- _____ 2.2 specimen preparation, dimensional measurements, mounting techniques;
- _____ 2.3 environmental conditioning of specimens;
- _____ 2.4 calibration of test machines;
- _____ 2.5 determination of moisture content and specific gravity;
- _____ 2.6 calibration and reading of load/deformation/strain-recording equipment;

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- _____ 2.7 operation of fire performance test equipment;
 - _____ 2.8 thermocouple mounting and calibration;
 - _____ 2.9 characteristics of adhesives used to bond specimens;
 - _____ 2.10 description of specimen and test setup;
 - _____ 2.11 balances and scales for mass determination;
 - _____ 2.12 load application—continuous and at proper rate;
 - _____ 2.13 description of progression of failure and failure mode;
 - _____ 2.14 reading of percentage of wood failure;
 - _____ 2.15 spectrophotometer (formaldehyde analysis);
 - _____ 2.16 spectrophotometer (treated-wood analysis); and
 - _____ 2.17 large chamber (formaldehyde).

3 CALIBRATION AND TEST METHODS

3.1 Laboratory Operations and Test Standards

- _____ 3.1.1 Samples and test specimens are uniquely identified for correlation with related records.
- _____ 3.1.2 Test data forms (as required by the reference standard or developed in-house) are properly completed.
- _____ 3.1.3 The laboratory maintains a dated log book or record for the tests it performs.
- _____ 3.1.4 Measurement equipment is appropriate for the test method.
- _____ 3.1.5 The test method(s) is performed correctly.
- _____ 3.1.6 The latest version of the test standards for which the laboratory seeks accreditation are available.



3.2 Calibration Requirements

Specific calibration requirements for the WBP program are:

- in accordance with the manufacturer's recommendation;
- the test method; or
- as specified in the following table;

whichever results in shorter time periods between calibrations.

<i>Apparatus/Instrumentation</i>	<i>Calibration or Verification Frequency</i>
dimensional measuring devices	annually
drying ovens	annually
load cells and test machines	annually
scales and balances	annually
large chamber (formaldehyde)	annually
automatic data logging and readout	annually*
potentiometers	annually*
thermocouple and related instrumentation	annually*
thermostats	annually*
environmental conditioning units	quarterly
calorimeters	per test method
gas analyzers	per test method
photometers	per test method
smoke obscuration measuring system	per test method
transducers and dial gages	per test method
spectrophotometer	per test method

* If the calibration of the equipment is shown to vary due to the lack of modern solid-state electronics, then the entry under *Frequency* shall be 6 months.

3.3 Mechanical and Physical Properties

- _____ 3.3.1 Samples are properly prepared, environmentally conditioned (including proper moisture content), handled, and maintained before testing.
- _____ 3.3.2 Measurements of specimen dimensions and mass are accurately determined; descriptions of important sample characteristics are recorded when required.
- _____ 3.3.3 Test equipment, devices, and instruments meet the requirements and are properly calibrated (and meet calibration conditions).
- _____ 3.3.4 Test(s) are conducted within the specified temperature, humidity, and/or air flow conditions.

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- _____ 3.3.5 Wood and wood-based products are tested in the specified orientation, if any, and with proper test setup.
 - _____ 3.3.6 For mechanical testing, proper rate of load, strain, or deformation applied to specimen.
 - _____ 3.3.7 For the physical and mechanical measurements, test reports adequately describe the procedures and equipment, and where appropriate, failure mode and characteristics.

3.4 Formaldehyde Tests

3.4.1 The laboratory:

- _____ a. maintains and verifies low levels of formaldehyde in storage and test areas;
- _____ b. monitors temperature and relative humidity, as required during conditioning and testing of the wood-based specimens;
- _____ c. has a chamber(s) that is properly constructed, calibrated, and maintained for conducting formaldehyde-emission tests;
- _____ d. has a desiccator(s) of adequate size for conducting formaldehyde-emission tests;
- _____ e. has perforator apparatus with all the necessary components for conducting formaldehyde-emission tests;
- _____ f. seals desiccators with vacuum grease; and
- _____ g. has necessary spectrophotometers, glassware, reagents, and other related apparatus for conducting formaldehyde analyses.

3.4.2 Test specimens:

- _____ a. have the specified dimensions; and
- _____ b. have proper edge-coating with paraffin wax where required.

3.4.3 The laboratory:

- _____ a. conditions and exposes specimens for the required length of time;
- _____ b. dries specimens to constant mass before formaldehyde-emission tests are conducted where required;
- _____ c. places specimens in chambers or desiccators such that all surfaces are freely exposed;

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- _____ d. cleans glassware using specified cleaning solutions;
 - _____ e. uses analytical grade reagents, as specified;
 - _____ f. uses freshly prepared standard formaldehyde solutions;
 - _____ g. adds sulfuric acid to analysis solutions such that splattering does not occur;
 - _____ h. standardizes the spectrophotometer at the appropriate wavelength (i.e., 412 or 580 nm);
 - _____ i. prepares formaldehyde concentration-UV absorbance calibration curves according to the procedure given in specified test method;
 - _____ j. assures that formaldehyde determinations on phenol-formaldehyde products have no interference from phenol; and
 - _____ k. conducts additional formaldehyde determinations when replicate analyses differ by more than the specified allowable limits.

3.5 Analysis of Treated Wood Products

3.5.1 Where required by the test method, the laboratory:

- _____ a. has apparatus with all the necessary components for specimen extraction;
- _____ b. has equipment with all the necessary components for specimen ignition;
- _____ c. has the necessary equipment for preparing pellets for XRF analysis; and
- _____ d. has a properly calibrated spectrophotometer (atomic absorption or XRF) for conducting the analysis.

3.5.2 The laboratory:

- _____ a. uses a vented oven for drying specimens, when specified;
- _____ b. uses a microwave oven for drying samples, only if it has established that error is not introduced into the analysis due to the microwave drying; and
- _____ c. has necessary glassware, reagents, and other related apparatus for conducting the analyses.

3.5.3 Test specimens:

- _____ a. are dried as required and, upon drying, are handled such that they do not pick up moisture before testing; and



- _____ b. are prepared to have the proper mass, volume, size, shape, density, or concentration as specified in the individual test method.

3.5.4 The laboratory:

- _____ a. performs the analytical methods correctly, and applies them to specimens that have the elements or constituents under analysis within the concentration range specified in the standard;
- _____ b. only conducts chloride determinations (AWPA A5) on samples that contain no halogens other than chlorine unless appropriate correction is properly made;
- _____ c. assures that standard solutions used for wet chemical and instrumental analyses are prepared to the required concentrations;
- _____ d. assures the correct concentration of standardized solutions and checks that they have not changed in concentration before use;
- _____ e. prepares calibration curves for spectrophotometric analyses (atomic absorption or XRF) according to the procedure given in specified test method;
- _____ f. verifies that calibration curves for spectrophotometric analyses have not changed during the analyses;
- _____ g. has procedures to assure that, when conducting spectrophotometric tests, interferences are not affecting the analytical results;
- _____ h. cleans and assembles glassware (e.g., extraction apparatus) as required;
- _____ i. uses reagent grade chemicals and reagent purity or deionized water, as specified;
- _____ j. uses high purity gases, and proper flame conditions and light sources when conducting atomic absorption spectrophotometry;
- _____ k. conducts extraction or ignition procedures correctly using specified times and temperatures, when performing tests incorporating these procedures; and
- _____ l. detects end-points properly when performing titrations.

